

REMARKS**Claim Amendments**

Several claims are amended to correct some informalities. No new matter is introduced by the claim amendments, as the amendments are supported by the specification considered as a whole. For example, support for amended claim 36 is found at page 20, lines 1-8. Entry into the record of these amendments.

**Claim Objections**

Claim 18 was objected to under 37 CFR 1.75 (c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim.

Claim 18 has been amended to correct this informality.

**Anticipation Rejections Under 35 U.S.C. §102 (b)**

Claims 1 and 14 were rejected under 35 U.S.C. 102 (b) as being fully anticipated by Byker et al., U.S. Patent 6,084,702 ("Byker") because, allegedly Byker teaches in Fig. 1b, every element of Applicant's invention defined in claims 1 and 14. Office Action, pages 2-3.

Applicant respectfully disagrees. As is apparent from the language of claims 1 and 14, in Applicant's light valve the optically active layer includes a polymer which is a thermochromic material. In contrast, Byker states at column 12, lines 25-26 "mixing the thermochromic material(s) in with a polymer forming formulation and curing or reacting the formulation". Thus, in Byker, the thermochromic material and polymer are not the same material.

This is underscored by Byker's discussion of his thermochromic materials, e.g., see col. 4, line 39 to col. 9, line 40.

For at least this reason, Byker fails to anticipate Applicant's claims 1 and 14.

Claims 24, 27, 28, 39, 47, 52 and 54 were rejected under 35 U.S.C. 102 (b) as being fully anticipated by Tonazzi et al., U.S. Patent 5,856,211 ("Tonazzi"). This rejection was premised on the assertion that, with respect to claims 24, 52 and 54, Tonazzi teaches a process for making light valves consisting of forming a seal (15) between two cover sheets at the circumference of a smaller sheet, optionally with fill and vent ports in the seal, and with the seal spacing apart the cover sheet, to form a cavity, characterized by: injecting into the cavity a liquid which then becomes a solid layer, with the layer having a variable transmission of light. (Col. 1, ll. 18-20 were relied upon for this rejection).

Regarding claim 27, it was asserted that Tonazzi further teaches that the cover sheets are etched to improve the adhesion between said cover sheet and said solid layer (referring to col. 14, ln. 65-66).

With respect to claim 28 it was asserted that Tonazzi teaches "...a silane ...applied to the cover sheet to improve the adhesion (col. 14, ln. 5-6) between the cover sheet and the solid layer (col. 14, ln. 5-6)." Office Action, p. 4.

It was also asserted that Tonazzi teaches a seal made from a ribbon of adhesive and that his processes are used to make architectural glazings that control unwanted solar heat or glare. Column 1, lines 18-20, and columns 13 and 14 were relied upon for this assertion. Office Action, pages 3-4.

Tonazzi's asserted teaching of a seal made from a ribbon or adhesive was relied upon with respect to claim 39, and his alleged disclosure of making architectural glazings to control unwanted solar heat or glare was asserted regarding claim 47. *Id.*

Applicant respectfully traverses this rejection.

Applicant's claims 27, 28, 39, 47, 52 and 54 are dependent from claim 24, which requires flushing the cavity of the light valve with an inert gas, which is not taught by Tonazzi. For at least this reason, Tonazzi fails to anticipate Applicant's claims.

Further, Tonazzi does not teach "fill and vent ports in the seal" as required by claim 52 of Applicant's invention. In Tonazzi Fig. 1B, element 13 is a vent port in the cover sheet. Unlike the present invention, in Tonazzi, column 6, lines 29-32: "the pressure is reduced simultaneously both inside the cell and outside it" and lines 46-50: "Due to the vacuum or a reduced pressure inside the cavity, the fluid travels quickly through the cell. Since air has been evacuated from the chamber, air sensitive liquids can be utilized"; claim 1, col. 15, line 26 and claim 8, col. 16, line 3 state: "evacuation cavity" and claim 14, col. 16, line 36 states: "maintain a pressure against ...substrate[s].

Both, a vacuum station and pressure maintaining devices taught by Tonazzi are too slow and complex for efficient, fast production. In contrast, Applicant's invention utilizes a low viscosity of the liquid to be injected (made possible by forming the high viscosity thermochromic polymer after injection.) For example, see claim 1, line 12: "most of said polymer is formed between said cover layers..." and claim 24: "which requires flashing .....with an inert gas..." which enable simpler and faster productivity and apparatus.

Tonazzi's method is based on using a vacuum (e.g., see his claim 1) or pressure (see Tonazzi's claim 14) to fill a cavity, which slows the production rate. In contrast, Applicant has developed a novel chemistry specifically for low viscosities (e.g., see page 4, paragraph 10), thus obviating the need for vacuum and pressure, and expediting production.

Tonazzi does not disclose light valves made from a "polymer and solvent reversibly forming finely divided separate phases upon heating", as recited in Applicant's claims 1 and 24.

### **Obviousness Rejections**

Claims 2-13, 15-17, 19-23, 25, 26, 50 and 51 were rejected under 35 U.S.C. 103 (a) as being unpatentable over Byker.

This rejection was premised on the assertion that Byker teaches a monomer soluble in a solvent at a sufficiently low temperature to avoid raising heat of polymerization of the monomer to its phase separation temperature, a solution of the solvent, monomer, and the polymer, which is in the process of being formed.

It was conceded that Byker fails to teach that the monomer is at least 15% soluble in the solvent, but it was asserted that Byker teaches dissolving the thermochromic system. It was concluded that a person of ordinary skill in the art would have found it obvious to modify Byker's disclosure to include at least 15 % solubility of the monomer in the solvent. Office Action, p.5.

It was additionally alleged that Byker's teaching of various additives in the thermochromic system would have made it obvious to modify his teachings to provide a crosslinking monomer with a functionality of two or more. It was argued that Byker teaches various solvents, additives and chemical composition, thereby rendering obvious to a person of ordinary skill in the art a modification of various of Byker's embodiments to provide greater versatility to reflect or transmit different types of light. Office Action, pages 5-6.

Further, it was asserted that Byker's purported teaching of a crosslinking monomer, which copolymerizes with the monomer to form a cross linked gel would have rendered it obvious to a person of ordinary skill to include a crosslinking monomer having a functionality of two or more to reduce the additives content in the thermochromic system.

Also, with regard to claims 4-13, 15-17, 19-23, 25, 26 and 51, it was alleged that Byker's asserted teaching of varying solvents and chemical composition of the thermodynamic system (including varying the compositions) would have rendered obvious Applicant's claims. Office Action, p.6.

This rejection is respectfully traversed. At the outset, the modification of Byker, without any suggestion or motivation provided by this reference or any other prior art of record, to arrive at Applicant's claimed invention is improper as a matter of law, at least because no reason was identified that would have prompted a person of ordinary skill in the art to modify Byker's disclosure in any fashion, much less in the manner asserted in the Office Action. The U.S. Supreme Court reiterated that a reason to combine elements of

different references to achieve an invention claimed in a pending patent application must be supplied and conclusory statements are not a substitute for it. *KSR International Co. v Teleflex Inc. et al.*, 127 S. C. 1727, 2007 WL 1237837 (U.S.), 82 USPQ2d 1385 (2007). Also See *Ex parte Smith*, slip op. at 14 (BPAI Appeal 2007-1925, June 25, 2007). The same principle should apply to a modification of a single reference, as was done in the Office Action.

Further, one fundamental difference between Byker and Applicant's rejected claims, as discussed above, is that in Byker's device, a thermochromic material is distinct from his polymer.

Thus, one of Applicants' claimed elements (the polymer and the solvent reversibly forming finely divided separate phases upon heating to a specific temperature) is absent in Byker. In particular, in Byker "said monomer" forms a soluble polymer with no thermochromic properties, while in Applicant's invention the polymer is soluble at low temperatures and insoluble at high temperatures, thereby becoming opaque white. As discussed above, in Applicant's invention, the polymer is the thermochromic material. It is also notable that Byker's thermochromic material turns absorbing to light, and thus has little commercial value as a glazing, while Applicant's invention material turns white to reflect unwanted sunlight.

At col. 10, lines 15-20, relied upon in the Office Action for rejection of claim 2, Byker refers to the thermochromic function of the finished product, while Applicant's claim 2 refers to temperatures during manufacture of the product.

The terms "soluble", "additives" and "chemical compositions" of Byker, relied upon in the Office Action, are so vague that a person of ordinary skill in the art would not be informed how to employ such materials to achieve Applicant's invention.

Regarding claim 51, this sealant was developed by Applicant specifically for this product as no commercially available sealant was identified which had all the necessary properties. Byker simply fails to disclose or suggest such sealant.

For all the above reasons, it is apparent to a person of ordinary skill that the functioning of Applicant's light valves is significantly different relative to Byker's materials.

Claims 29-38, 40, 42, 43, 48, 49, 53 and 55 were rejected as obvious over Tonazzi.

As discussed above, claim 24 has been amended to recite flushing the cavity with an inert gas. Tonazzi fails to disclose at least this feature of Applicant's invention. Since all the other rejected claims depend from claim 24, Tonazzi fails to render obvious such claims due to the absence in Tonazzi's disclosure of at least one of Applicant's claimed features.

Claim 41 was rejected as obvious over Tonazzi in view of Byker. This rejection was premised on the assertion that the combination of Tonazzi (which admittedly fails to teach placing two cover sheets with a sealant between them, in a heated roller press) with Byker (which allegedly provides such teaching) would have rendered claim 41 obvious.

Claim 41 depends from claim 24. As discussed above, Tonazzi lacks disclosure (or suggestion) of at least one element of claim 24 (and thus 41), i.e., flushing the cavity with an inert gas. Byker fails to supply this deficiency of Tonazzi. Thus, the combination of these two disclosures (though improper) would have failed to render obvious to an ordinary artisan Applicant's claim 41.

Claims 44 and 45 were rejected under 35 U.S.C. 103 (a) as being unpatentable over Tonazzi in view of Crawford et al., U.S. Patent 6,094,290 ("Crawdord").

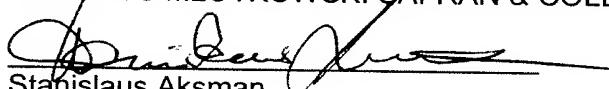
Claims 44 and 45 depend from claim 24, which is novel and unobvious in view of Tonazzi, for the above-discussed reasons. Crawford fails to supply Tonazzi's deficiencies. Furthermore, Applicant's sealant was developed specifically for Applicant's invention, since (as discussed above) no other existing sealants were identified which were suitable for the Applicant's process.

An indication of allowance of all claims is solicited.

In the event any outstanding issues remain, Applicant would appreciate the courtesy of a telephone call to the undersigned Counsel to resolve such issues and place the application in condition for allowance.

To the extent necessary, a petition for an extension of time under 37 C.F.R. §1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 50-2478 and please credit any excess fees to such deposit account.

Respectfully submitted,  
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Date: June 11, 2009